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W. JOHNSON

2,193,928

APPARATUS FOR MOUNTING FLEXIBLE SHEETS

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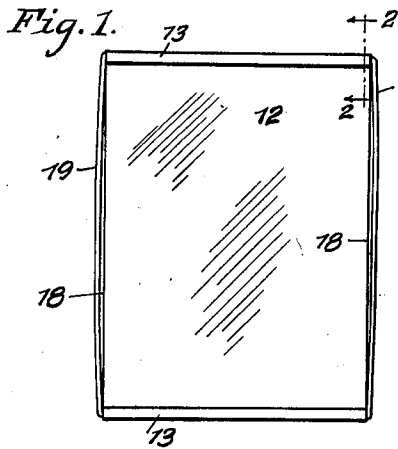


Fig. 2.

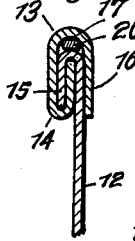


Fig. 3.

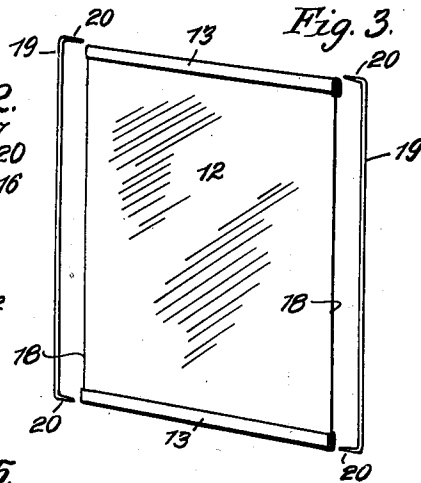


Fig. 4.

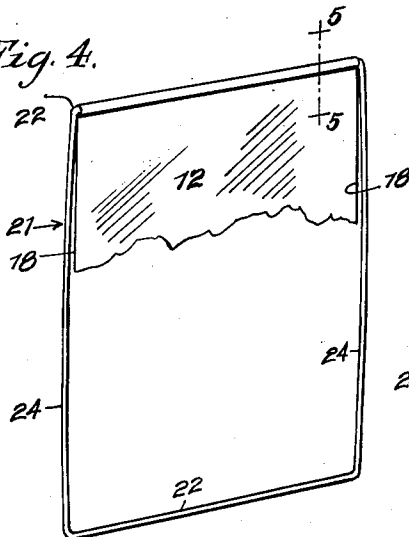


Fig. 5.

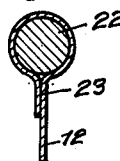


Fig. 6.

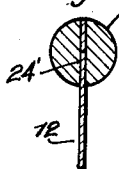


Fig. 7.

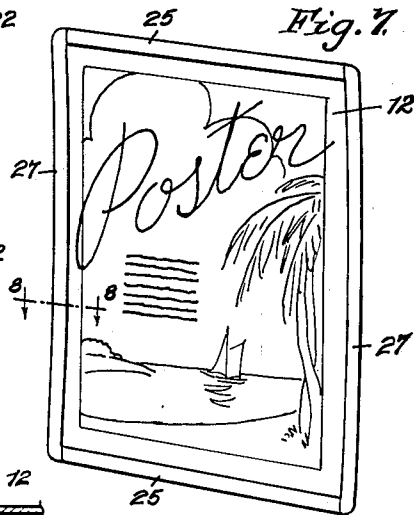


Fig. 8.

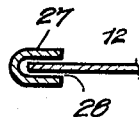
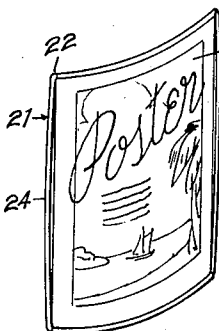


Fig. 10.

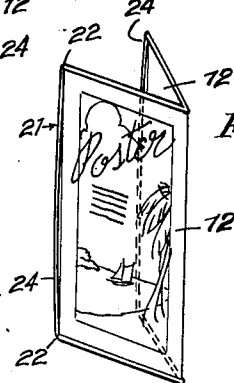


Fig. 11.

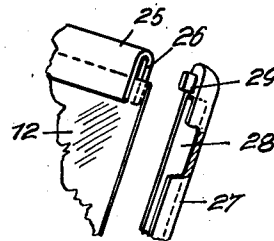


Fig. 9.

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UNITED STATES PATENT OFFICE

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APPARATUS FOR MOUNTING FLEXIBLE SHEETS

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8 Claims. (Cl. 40—125)

My invention relates to an apparatus for mounting flexible sheets, such as posters, counter cards, menus, or the like.

An important object of the invention is to provide a device of the above mentioned character which will support and hold a flexible sheet taut, while leaving both sides of the sheet substantially completely uncovered.

A further object of the invention is to provide a device of the above mentioned character which is simple and inexpensive.

A further object of the invention is to provide a holder of the above mentioned character which serves as a frame for protecting the edges of the flexible sheet supported thereby.

A further object of the invention is to provide a holder of the above mentioned character which is adapted to serve as an easel.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawing forming a part of this application and in which like numerals are employed to designate like parts throughout the same;

Figure 1 is a side elevation of a holding device embodying my invention,

Figure 2 is a detailed section taken on line 2—2 of Figure 1,

Figure 3 is an exploded perspective view of the device shown in Figure 1,

Figure 4 is a perspective view of a modified form of holding device,

Figure 5 is a transverse section taken on line 5—5 of Figure 4,

Figure 6 is a transverse section similar to Figure 5 showing a further modification,

Figure 7 is a perspective view of a further modified form of holding device,

Figure 8 is a horizontal section taken on line 8—8 of Figure 7,

Figure 9 is a fragmentary perspective view of the holding device shown in Figure 7, parts separated,

Figure 10 is a perspective view of the holder bent to form an easel, and,

Figure 11 is a similar view of the holder bent in a different manner to provide an easel.

Attention being called first to Figures 1 to 3 inclusive, the numeral 12 designates a flexible sheet, such as a paper poster or the like. This flexible sheet is to be held taut, and to accomplish this the same is pulled at its opposed edges, top and bottom, in opposite directions. Secured to the opposed top and bottom edges are binding elements 13, having U-shaped portions 14 to receive the edges 15 of the flexible sheet. The binding elements also have down-turned portions 16, providing recesses 17. The binding elements are of course clamped to the opposed top and bottom

edges of the flexible sheet 12. The flexible sheet has lateral edges 18 which are not attached to supporting means. The binding elements 13 are sufficiently stiff so that when an outward yielding force is applied to the ends of the same, in opposite directions with respect to the longitudinal axis of the sheet, the binding elements will hold the sheet taut throughout its entire area. These binding elements are flexible to the extent that they may be bent laterally upon themselves, when it is desired that the holding device serve as an easel as will be described. The binding elements 13 serve as stiff rods attached to the opposed edges of the flexible sheet. The numeral 19 designates rods arranged adjacent to the lateral edges 18 but having no connection therewith. The rods 19 have inwardly projecting extensions 20, to enter the recesses 17. The rods 19 may be resilient and suitably stiff to retain the flexible sheet 12 under tension and taut. When the rods 19 are resilient they are made in a length slightly greater than the all over length of the flexible sheet 12 and binding elements 13. In order that these rods 19 may be secured to the binding elements they must be bowed so that their length will be reduced and the projections 20 will enter the recesses 17 when the resilient rods 19 are bowed. When the pressure is released from the resilient rods 19, they tend to straighten out, and permanently retain the flexible sheet 12 under tension and taut. These resilient rods apply a yielding force in opposite directions to the corresponding ends of the binding elements 13. I also contemplate not having the rods 19 resilient by forming them flexible but sufficiently stiff so that they retain the flexible sheet taut. When the rods are not resilient they will have the same length in excess of the all over length of the combined sheet 12 and binding elements 13. The non-resilient rods will be bowed to reduce their length and after the projections 20 have been inserted into the recesses 17, the rods will be bent in a reverse direction to reduce the bow and place the sheet under tension.

In Figures 4 and 5, I have shown a modified form of holding device comprising a rectangular frame 21, which may be formed of metal, and which is preferably resilient. This frame comprises opposed attaching portions 22 and the opposed edges of the attaching sheet 12 are secured to the opposed portions 22 by being passed about the frame and then secured to the sheet, at 23, by glue or the like. The frame comprises opposed portions 24, arranged adjacent to the lateral edges 18 of the sheet, and separate therefrom.

In Figure 6, I have shown a different manner of securing the sheet to the opposed portions 22 of the frame. In Figure 6, the opposed portion 22 is provided with a slot 24', receiving the

opposed edges of the sheet 12, clamped therein, by hammering upon the portion 22, as is obvious.

In the use of this form of the holding device, the bottom of the sheet 12 may be secured to the bottom frame portion 22, and pressure is then applied in a downward direction upon the upper frame portion 22, to bow the opposed side portions 24 and hence reduce the length. The upper edge of the sheet 12 is then secured to the upper portion 22. The length of the side frame portions 24 are therefore greater than the all over length of the flexible sheet 12 and the frame portions 22 and when the pressure is released from the upper portion 22, the portions 24 will tend to straighten and increase their length and thereby exert continuous yielding force outwardly and in opposite directions with respect to the sheet, to retain the same taut. The frame 20 is preferably resilient but the portions 22 may be bent to convert the device into an easel. I also contemplate forming the opposed portions 24 flexible and non-resilient. When this is done, these side portions are bowed to reduce their length prior to the application of the sheet 12 to the portions 22, whereby the length of the frame portions 24 is greater than the all over length of the sheet 12 as applied to the portions 22. The frame portions 24 are subsequently bent in an opposite direction to reduce the bow and increase their length, to place the flexible sheet under tension and hold it taut.

In Figures 7, 8, and 9, I have shown a further modification of the invention. In these figures, the holder or frame comprises binding elements 25, U-shaped in cross-section, and which receive the upper and lower edges of the sheet 12 and are clamped thereto. These binding elements have recesses 26 outwardly of the edges. The numeral 27 designates opposed members or rods, arranged adjacent to the lateral edges 18 of the sheet 12. The rods 27 preferably have grooves 28, to receive the lateral edges 18, but these lateral edges are freely mounted within the grooves 28 and are not clamped therein. The rods 27 are provided at their ends with inwardly facing projections 29, to enter the recesses 26. The rods 27 may be resilient and are made in a length greater than the all over length of the combined sheet and binding elements 25. The rods 27 may be bowed in a plane at a right angle to the face of the sheet 12. When the pressure is released from the rods 27 they tend to straighten out and increase their length and hence hold the sheet taut. The rods 27 may also be formed flexible and non-resilient but in a length longer than the all over length of the sheet 12 and binding elements 13. After the bowed rods 27 are attached to the binding elements 13 they are bent in an opposite direction to reduce their bow and increase their length and hence will hold the sheet 12 taut. The rods 27 are suitably stiff to hold the sheet taut. The binding elements 25 may also be bent to convert the holder into an easel.

Figure 10 shows how each of the holding frames may be curved or bent to form an easel while Figure 11 shows the same bent into V-shaped formation, to form an easel.

It is to be understood that the forms of my invention herewith shown and described are to be taken as preferred examples of the same and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, what I claim is:

1. In a holder in combination with a flexible sheet having bound edges and lateral edges, resilient elements arranged exterior to the lateral edges and engaging the bound edges, the resilient elements being under tension to hold the flexible sheet taut.

2. In a holder in combination with a flexible sheet having bound edges and lateral edges, rods arranged in a plane with the lateral edges and engaging the bound edges, the rods being bowed and being of a length greater than the all over length of the combined sheet and bound edges, said rods holding the flexible sheet taut when the bow of the rods is reduced.

3. In a holder in combination with a flexible sheet having bound edges and lateral edges, rods arranged in a plane with the lateral edges and engaging the bound edges, said rods being flexible and bowed and suitably stiff to hold the flexible sheet taut, said rods being of a length to hold the sheet taut when the bow of the rods is reduced.

4. A holder in combination with a flexible sheet, comprising opposed binding elements secured to edges of the sheet, said sheet having lateral edges, and rods arranged adjacent to the lateral edges and having inwardly facing projections to engage with the binding elements, the rods being flexible so that they may be bowed and sufficiently stiff to hold the sheet taut.

5. A holder in combination with a flexible sheet, comprising opposed hollow stiff binding elements secured to edges of the flexible sheet, said flexible sheet having other edges, rods arranged adjacent to said other edges and having inwardly facing extensions to enter the hollow binding elements, said rods being flexible so that they may be bowed and suitably stiff for holding the sheet taut.

6. A holder in combination with a flexible sheet comprising, an integral rectangular frame including opposed attaching rods secured to the sheet and opposed tension rods, the tension rods being arranged in a plane with other opposed edges of the flexible sheet and of a greater length than the flexible sheet, the tension rods being flexible so that they may be bowed and suitably stiff to retain the flexible sheet taut.

7. A holder in combination with a flexible sheet comprising, a frame, said frame including opposed attaching rods secured to the sheet and tension rods arranged adjacent to other opposed edges of the sheet, the tension rods being detachably connected with the ends of the attaching rods, the attaching rods and tension rods having channels to receive the edges of the flexible sheet, the tension rods being flexible so that they may be bowed and suitably stiff to retain the flexible sheet taut.

8. A holder in combination with a flexible sheet comprising, a frame including sets of opposed portions, one set of opposed portions being attached to the opposed edges of the flexible sheet, the other set of opposed portions being arranged in a plane with other opposed edges of the sheet, the last named set of opposed portions being flexible so that they may be bowed and suitably stiff to retain the sheet taut, the first named set of opposed portions being flexible so that they may be bent to convert the holder into an easel.

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